

REMARKS

Claims 1-3 and 9-16 are currently pending in this application. Applicants have withdrawn claims 4-8 and 17-25 from consideration without prejudice in response to a restriction requirement. Reconsideration is respectfully requested in light of the above amendments and the following remarks.

The Examiner rejected claim 16 under 35 U.S.C. §112, second paragraph as being indefinite. Applicants have amended claim 16 in accordance with the Examiner's suggestions and therefore respectfully request that this rejection be withdrawn.

The Examiner rejected claims 1-2 and 9-16 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,740,811 to Hedberg et al. Applicants respectfully traverse this rejection.

Applicants' claimed invention as recited in claims 1 and 16 is directed to a method and corresponding system for emulating a surface electrocardiogram (EKG) of a patient. For example independent claim 1 recites a method comprised in part by sensing separate cardiac signals ... and selectively concatenating portions of the separate cardiac signals to yield an emulated surface EKG. (Underlining added for emphasis only). Applicants respectfully submit that Hedberg et al. do not disclose or suggest the recited claim elements.

Rather, Hedberg et al. discloses a device and method for generating a synthesized ECG wherein measured signals from two or more intracardiac and/or extracardiac electrodes are combined and a synthesized surface ECG is obtained by subjecting the measured signals to signal processing. The term "synthesized ECG" as used by Hedberg et al. is explicitly defined to mean "a signal generated from at least two in vivo signals, such as at least two IEGMs, which provides the same information as a standard surface ECG." (Hedberg et al., col. 2, lines 57-64).

However, Hedberg et al. process the in vivo signals and then add them together (in their entirety) to form the synthesized signal. Hedberg et al. disclose that the reason for adding the signals from the electrodes is that they will simulate a signal obtained from a bigger electrode. (Hedberg et al. col. 6, lines 63-65). For example, in FIG. 13

transforming units, which process each of the electrode outputs, are coupled to a combining unit by multipliers which individually weigh each signal under the control of a microprocessor. The combining unit includes a summation stage which sums the outputs of the multipliers (in their entirety) to form the synthesized surface ECG. (Hedberg et al. col. 8, lines 15-50).

Thus, Hedberg et al. process individual signals from separate electrodes and sum them together in their entirety to form an emulated surface ECG. Hedberg et al. do not however, disclose or suggest concatenating (i.e. linking or joining together) portions of the separate cardiac signals to yield an emulated surface EKG as recited in Applicant's claimed invention. Accordingly, Applicants respectfully submit that claims 1, and 16 are novel and non-obvious over Hedberg et al. and are therefore allowable. Applicants further submit that claims 2-3 and 9-15 that depend from claim 1 are allowable as is claim 1 and for additional limitations recited therein.

The Examiner rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Hedberg et al. in view of U.S. Patent 5,193,550 to Duffin. Applicants respectfully traverse this rejection.

The Examiner admits that Hedberg et al. do not disclose or suggest sensing far-field atrial and ventricular signals and concatenating portions of these signals to form a synthesized surface ECG as recited in claim 3 of the present application. The Examiner asserts however that Duffin teaches sensing far-field signals to aid in categorizing the source and type of tachyarrhythmias. The Examiner therefore alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method and device for simulating an ECG as taught by Hedberg et al. with the sensing of far field waves taught by Duffin to categorize the source and type of tachyarrhythmia detected.

It is well understood that there must be some suggestion in the references that they be combined to support an obviousness rejection. Merely picking and choosing among various references is not permitted, and doing so amounts to no more than mere hindsight reconstruction. One of ordinary skill in the art must be motivated by the teachings to combine the references, without using applicants' claimed invention as a guide.

The Examiner suggests that the motivation to combine Hedberg et al. and Duffin is allow the system of Hedberg et al. to categorize the source and type of tachyarrhythmias detected. Applicants respectfully disagree. Applicants submit that Hedberg et al. and Duffin are directed at completely different systems. Hedberg et al. like the present invention is directed toward a system for emulating surface ECGs and no where mentions or discloses a system for categorizing detected arrhythmias. Duffin, on the other hand discloses a system and method for discriminating between detected arrhythmias and in no way suggests that these signals can be used to emulate a surface ECG. Therefore, there is no motivation to combine Hedberg et al. with Duffin, since the two references disclose very different systems which are directed to solving very different problems.

Moreover, even if the teachings of Hedberg et al. were combined with those of Duffin one still does not arrive at Applicants' claimed invention because neither Duffin or Hedberg et al. disclose or suggest that far-field signals may be concatenated to form a surface ECG. The mere disclosure by Duffin that far-field signals may be used to discriminate between arrhythmias does not in any way render obvious the use of far-field signals when constructing an emulated surface ECG. Rather, as admitted by the Examiner, the combination of Hedberg et al. and Duffin simply yields a system that is capable of categorizing detecting arrhythmias through the use of far-field signals, not one that utilizes far-field signals to generate an emulated surface ECG as recited in claim 3. Applicants therefore respectfully submit that claim 3 is novel and non-obvious over Hedberg et al. and Duffin and is therefore allowable.

In light of the above amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

7-26-04
Date

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